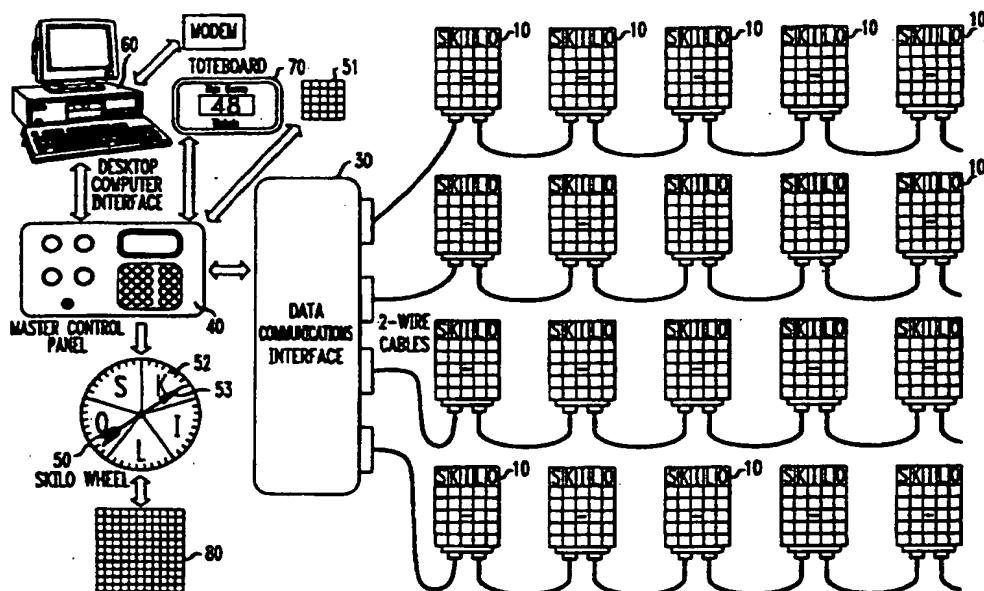




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A63F	A2	(11) International Publication Number: WO 97/15361 (43) International Publication Date: 1 May 1997 (01.05.97)
(21) International Application Number: PCT/US95/13917		(81) Designated States: CA, JP, MX, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).
(22) International Filing Date: 23 October 1995 (23.10.95)		Published <i>Without international search report and to be republished upon receipt of that report.</i>
(71)(72) Applicant and Inventor: CAPPETTA, Louis [US/US]; 921 Cedar Bridge Avenue, Brick Town, NJ 08723 (US). (74) Agent: FRAYNE, Clifford, G.; 44 Princeton Avenue, Brick Town, NJ 08724 (US).		

(54) Title: **INTERACTIVE AMUSEMENT GAME AND PRIZE REDEMPTION SYSTEM**

(57) Abstract

An interactive amusement game and redemption system in which a central processing unit, control panel and plurality of players' desks are interconnected such that the operator of the control panel and the game is aware of the money deposited by each individual player, the number of cards selected by the player and the identity of those cards for play in the game, and the amount of value tickets to be awarded and to which player, the same information being available to the player at each individual player's position through instantaneous LED display, the players seeking to be awarded points by starting and stopping a random number generator selectively, to match an indicia on the random number generator with an indicia on the player's playing card.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LJ	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

INTERACTIVE AMUSEMENT GAME AND PRIZE REDEMPTION SYSTEMBACKGROUND OF THE INVENTION1. Field of the Invention

The present invention relates to amusement games and, in particular, to an interactive amusement game in which the player attempts to control the selection of random numbers in order to form a match, the player and operator are electrically interconnected providing the player with an instantaneous readout as to the quantity of his bank and the quantity of accumulated points and providing the operator with instantaneous information regarding the number of players, the identity of the cards being played by the players, and the amount of money deposited on a particular game.

2. Description of the Prior Art

The game of Bingo is a popular game in which a player attempts to match randomly drawn numbers with random numbers on a playing card in order to obtain a match either vertically, horizontally, diagonally or pattern-wise in order to win money or prizes. Traditionally, the random numbers selected in Bingo are manually selected from a rotating barrel and announced by the operator of the game. The operator controls the sale of

the playing cards and the collection of money and the disbursement of prizes in a substantially manual operation.

Applicant has developed an interactive game along the lines of Bingo in which the player's playing position is interconnected with the control panel and operator of the game and both are interactively connected with a central processing unit. Additionally, the design of the game allows the player to attempt to selectively control the selection of a random number from a spinning indicia about a stationary wheel on which the indicia of numbers are positioned on the outer circumference. The player's position is fully automated with a bill acceptor, ticket dispensers which dispense tickets having an indicia of their point value, an LED display which informs the player of the amount in his bank, the amount of points accumulated, and the quantity of cards played, a bar code reader which reads a bar code on a playing card, this information being stored in random access memory (RAM) and confirmed to the control panel that the card is in play, and a start button, and a stop button utilized by the player in an attempt to selectively control the random selection of numbers on the wheel located at the control panel, and a call button

for assistance. Two additional buttons perform replay and cancel functions.

Applicant has fully automated what was once a manual operation which allows the player to interact in the game itself in attempting to start and stop the spinning indicia in order to obtain the desired random number while at the same time providing the operator with a complete readout of the identity and number of cards being played for a particular game, the amount of money which has been deposited to play the particular game, and which can further set the amount of the payout for a particular game based on the number of players and deliver to the appropriate players the indicia of their winning in the form of a ticket dispensed at the player's playing position with the appropriate number of points identified thereon.

The benefits of the system are that the operator now has greater control over the game from the standpoint of having an instantaneous readout and knowledge of the number of players, the number of cards in play and the amount of money deposited. The operator also has an instantaneous checkouts with respect to the validity of a win as a result of the bar code reader

reading the identity of the card and storing the contents of that card in the RAM.

The player has a more interactive interest in the game since the player from his playing position attempts to start and stop the wheel based on the random numbers on the player's playing card in an attempt to obtain the numbers which the player needs in order to complete the required line or pattern. As will be explained hereafter, the system is designed so that a plurality of players will be attempting to start and stop the wheel at a predesignated location which will provide the particular player with the number which he or she desires. However, the system is controlled such that only one signal from one player desk will be selected in order to control the wheel.

OBJECTS OF THE INVENTION

An object of the present invention is to provide for an interactive amusement game in which the player participates in an attempt to exert an element of skill over the selection of a randomly generated number, thereby skewing the random selection process.

Another object of the present invention is to provide for a novel interactive amusement game in which the player's

playing position is fully automated to accept the player's money as consideration for playing the game and to dispense prize tickets if a player should be a winner.

A still further object of the present invention is to provide for a novel, interactive amusement game in which the player's playing position contains a LED display informing the player of the size of his playing bank and the amount of award points that are owed to him and the amount of money designated for and quantity of cards selected for the immediate game being played.

A still further object of the present invention is to provide for a novel, interactive amusement game in which the player's playing position contains a means for the player to attempt to control the starting and stopping of the selection indicia for random numbers formed on a stationary wheel.

A still further object of the present invention is to provide for a novel, interactive amusement game which provides the operator with an instantaneous readout on all aspects of the game being conducted including, but not limited to, the number of players, the number of cards being played, the amount

of money deposited, and the amount of prize points associated with the particular game based upon the foregoing information.

SUMMARY OF THE INVENTION

An interactive amusement game and redemption system in which a central processing unit, control panel, and a plurality of players' desks are interconnected such that the player's desk will accept the player's money consideration for playing the games and dispense award tickets to the player if successful as well as provide the player with an instantaneous LED display of the amount of his bank and the amount of his award points and also including a means for the player to attempt to influence the selection of a random number, the system also providing the operator with an instantaneous readout of the number of players playing a particular game, the amount of money deposited on the particular game, and the amount of award points awarded from the particular game as well as setting the total quantity of award points to be awarded for a particular game based upon the amount deposited and the number of cards in play.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects of the present invention will become evident upon consideration of the specification herein and the illustrations attached hereto in which:

Figure 1 is a schematic drawing of the interactive amusement game and redemption system.

Figure 2 is a schematic of the interactive player's position.

Figure 3 is a top view of a schematic illustration of the master control board.

DETAILED DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic illustrating the interconnection of a player's desk 10 with a communication interface 30, the main control panel 40 and the electrically-operative random number generator 50 which preferably comprises a vertically-oriented wheel having a series of indicia 52 oriented about its circumference selectively alignable with a identifying indicia 53 for identifying a selected random number.

Referring to the player's position 10, a schematic of the elements positioned therein is illustrated in Figure 2. In actual operation, there would be a plurality of players' desks 10 interconnected or daisy-chained together with a central

connection running to the communication interface 30 and main control panel 40 and random number generator 50. These desks as schematically illustrated in Figure 1 would be positioned in front or about the main control panel where the operator or caller, as he was referred to in the manual version of Bingo, would be positioned.

Referring again to Figure 2, each player's desk would have a bill reader and acceptor 12 for the acceptance of both paper currencies and coin. The coin or bill acceptor would include an enclosed secure receptacle for receiving the currency and maintaining it in a secure fashion until collected by an attendant. The coin or bill acceptors 12 would be interconnected with an LED display 14 which would inform the player of the amount of money deposited in his bank.

Each desk would have a plurality or selection of playing cards displaying a five by five grid with random numbers positioned thereon. Each playing card would have its individual bar code.

After having deposited money in and reader 12, the player's LED display 14 would indicate the amount of money in his bank. The player would then select the card or cards which he wished to play. He would scan the bar code through a bar

code reader 16. The cost of the card or cards would be deducted from the player's bank and LED display 14 would indicate the reduction in the player's bank based on the number of playing cards scanned, and indicate the amount of money the player was utilizing for the game. The amount of money deposited in the bill acceptor 12 and the number and identity of the playing cards scanned through bar code reader 16 would automatically be communicated to the communication interface 30 and the main control panel 40 by means of a processing unit and data interface 15 located at each table. In this manner, the operator knows the number of cards in play for each game and the amount of money deposited in the player's bank.

Each player's desk has its own distinct, encoded identity, such that the operator can know the total number of cards played by all players in all positions or the operator can selectively determine the play at a single position. This encoded identity is of particular importance with respect to the distribution of point tickets at the conclusion of the game as will be discussed hereafter.

Once all players had deposited money in the coin or bill acceptors 12 and scanned the desired number of playing cards through bar code reader 16, the operator would indicate the

commencement of the game. Players would start the rotation of the random number generator 50 by depressing a start button 18 and then attempt to stop the random generator 50 from rotation such that an indicia on the circumference of random number generator 50 would be in alignment with identifying indicia 53. The player would attempt to stop the random number generator 50 by depressing stop button 20. The player would be attempting to stop the random number generator 50 at an indicia which matched an indicia on the playing grid of the player's playing card. The communication interface 30 and master control panel 40 are designed such that while a plurality of players may all be attempting to depress stop button 20 on different indicia, the central processing unit 30 and master control panel 40 will allow only one signal to the wheel.

The indicia chosen on random number generator 50 would then be called out or visually communicated to the players who would mark their playing cards where appropriate. The operator would then release the wheel to repeat the process.

The first player to obtain a vertical, horizontal, or diagonal line of random numbers on the playing grid of the playing card or obtain the pattern specified at the start of the game would call out. The operator would then stop the

random number generator 50 by overriding the start buttons 18 at the various players' desks, and the winning player would depress call button 22 so that an attendant can visually verify the player's playing card and/or the winning card(s) can be electronically verified.

Once verified, the operator would award point tickets dependent upon the number of players and number of cards in play for the particular game. At each player's desk, there is located two ticket dispenser 24 which would dispense point tickets in the desired denominations. Once a winner was verified, the operator, from the master control panel 40, can command the dispensing of the appropriate valued tickets and this signal from the master control panel is sent to the appropriate player's desk and only the appropriate player's desk who is a winner as a result of the encoded distinct identity of each player's desk. The ticket dispenser would then dispense the appropriate valued tickets to the player. The value of the tickets would also be displayed on the LED display 14. Note that there can be more than one winning player in each game. In these cases, the winning points are

equally distributed to each winning player's desk; points are rounded up, if necessary, to allow for equal distribution of tickets.

At this point in time, a new game would commence and the scan button light 19 would illuminate signaling players to enter the card identities. If a player still had a remaining balance in his bank as depicted on the LED display 14, the player would then select his playing cards for the new game and scan them through the bar code reader 16 or depress the repeat button 17 which would identify the cards being played as those from the previous game. LED display 14 would then indicate a decrease in the bank balance of the player based on the number of cards scanned and all of the information would be communicated from each individual player's desk to the communication interface 30 and to the master control panel 40.

The system allows the operator from the master control panel 40 to control automatically, the costs being charged for the playing cards and the number of points for which the players are competing. For example, if the operator wished to encourage more play, the operator can automatically reduce the cost for the playing card or program the system to offer three playing cards for the price of two. Further, since the operator can get an instantaneous readout of the amount of

cards being scanned for a particular game, the operator can raise or lower the amount of point tickets for which the players are competing.

Additionally, the system can include a central processing unit in the form of a desktop computer 60 interconnected with the main control panel for the storage of data regarding all of the games played for analysis of play and player information and for the maintenance of bookkeeping and accounting aspects of the system.

Figure 3 is a schematic of the main control panel 40. The main control panel 40 would have a new game button 42 which would clear out all of the old data in preparation for the commencement of a new game and illuminate scan button 19 at player's desk 10 to signal the player to enter the card codes. It should be noted that this data could still be maintained in the central processing unit 60. The wheel enable button 43 enables the start wheel lamps and buttons at the player's desk 10. The start wheel button 44 allows the master controller to apply power to the random numbered generator 50 to commence its spin. The stop wheel button 45 is an override to signal the master controller to turn off the power to the wheel. The numeric key pad 46 allows entry of information required to

dispense tickets to winning players at their location and may be used for system configuration, diagnostics or control of other features. An LCD display 47 displays current status information and facilitates data entry with the key pad. An alarm 48 can also be incorporated at the main control panel which can alert the operator to certain conditions during the play of game.

In a typical game scenario, the operator would press the new game button which would permit new players to deposit monies in the coin or bill acceptors 12 in order to obtain playing credits. New players and existing players would then scan their playing cards across the card reader 16 which would automatically decrease the amount of credit displayed on the player's LED display. After a proper amount of time, the operator would press the wheel enable button 43 at the main control panel which would extinguish the scan button light and cause the start wheel lights 18 at the player's desk to illuminate. At this time, the main control panel is now waiting for someone to press a start wheel button at their player's position 10. Any start wheel buttons held down in anticipation of the wheel enable signal will be ignored.

As soon as a start wheel button 18 is pressed and the signal acknowledged, the light on the start wheel button at all players' position 10 will extinguish. The accepted signal will commence the rotation of the random number generator 50. The master controller will signal the stop wheel lamps to illuminate sometime after the random number generator has started spinning. This signal can be based on a randomly generated timer. The stop wheel lamps will be illuminated and all stop wheel buttons 20 at the player's position 10 will be enabled. The main control panel now awaits a signal from a stop wheel button. When a stop wheel button 20 is pressed and the signal is received, all stop lamps are turned off and the control panel commences to stop the wheel. The operator would then announce the number which has been generated and commence the process again if no winner was identified. This sequence would commence with the operator pressing the wheel enable button.

Once a winner had been determined, the number of tickets would be dispensed as per the prior description and the new game button would be enabled by the operator allowing the players to deposit monies and scan playing cards.

This system would include security and redundancy capability in that playing information and status would be stored not only in the master controller but in the data communications interface and central processing unit 15 at each desk. The system may also include a visual tote board 50 to identify to players the amount of redemption tickets they are competing for, a flash board which displays the selected numbers, as well as a pattern board 51 which is an illuminated mock up of the actual playing cards, the pattern board visually displaying the row, column or pattern which the players are attempting to complete.

While the invention has been described with reference to its preferred embodiment thereof, it will be appreciated by those of ordinary skill in the art that various changes can be made to the process and apparatus without departing from the basic spirit and scope of the invention.

WHAT IS CLAIMED IS:

1. An automated, interactive amusement game and redemption system for a plurality of players wherein said players attempt to start and stop a random number generator at desired indicia to match an indicia on a player's playing card and forming a predetermined pattern, said game comprising:

a plurality of players' desks, interactively connected with a master control board and a random number generator, each of said players' desks comprising;

money accepting receptacles and money readers for establishing a player's bank;

a plurality of said playing cards, coded, and in the form of a grid having random indicia positioned on said grid;

a code scanner for reading said code on said selected playing cards;

a ticket dispenser or printer for dispensing value tickets or coupons;

a means for starting said random number generator;

a means for stopping said random number generator;

a player's desk central processing unit for storage of data generated from said money reader, said code scanner, and said ticket dispenser or printer;

an LED display for visual display of the status of said player's bank and said ticket dispenser and said active cards; and

a data interface in communication with said player's desk central processing unit and said master control board for communicating said data to said master control board, said master control board comprising:

a means for signaling said player's desk of the start of said interactive amusement game;

a means for enabling said random number generator;

a means for starting and stopping said random number generator;

a keyboard entry pad for control and configuration of said interactive amusement game;

a means for directing and dispensing of value tickets at selected player's desks; and

a means for communicating with a master control board central processing for storage of said game data

communicated from said player's desk central processing unit.

2. The automated, interactive amusement game in accordance with Claim 1 wherein each of said players' desks has positioned therein, a separate encoded switch permitting said master control board to monitor said data at said players' desks and to direct the dispensing of value tickets to players' desks.

3. The automated, interactive amusement game in accordance with Claim 1 wherein said means for signaling said players' desk for the start of said interactive amusement game comprises an enabling button in communication with said players' desks from said master control board enabling said money accepting receptacle and said money reader and said code scanner and signaling such enablement to said player by an illumination means positioned on said player's desk.

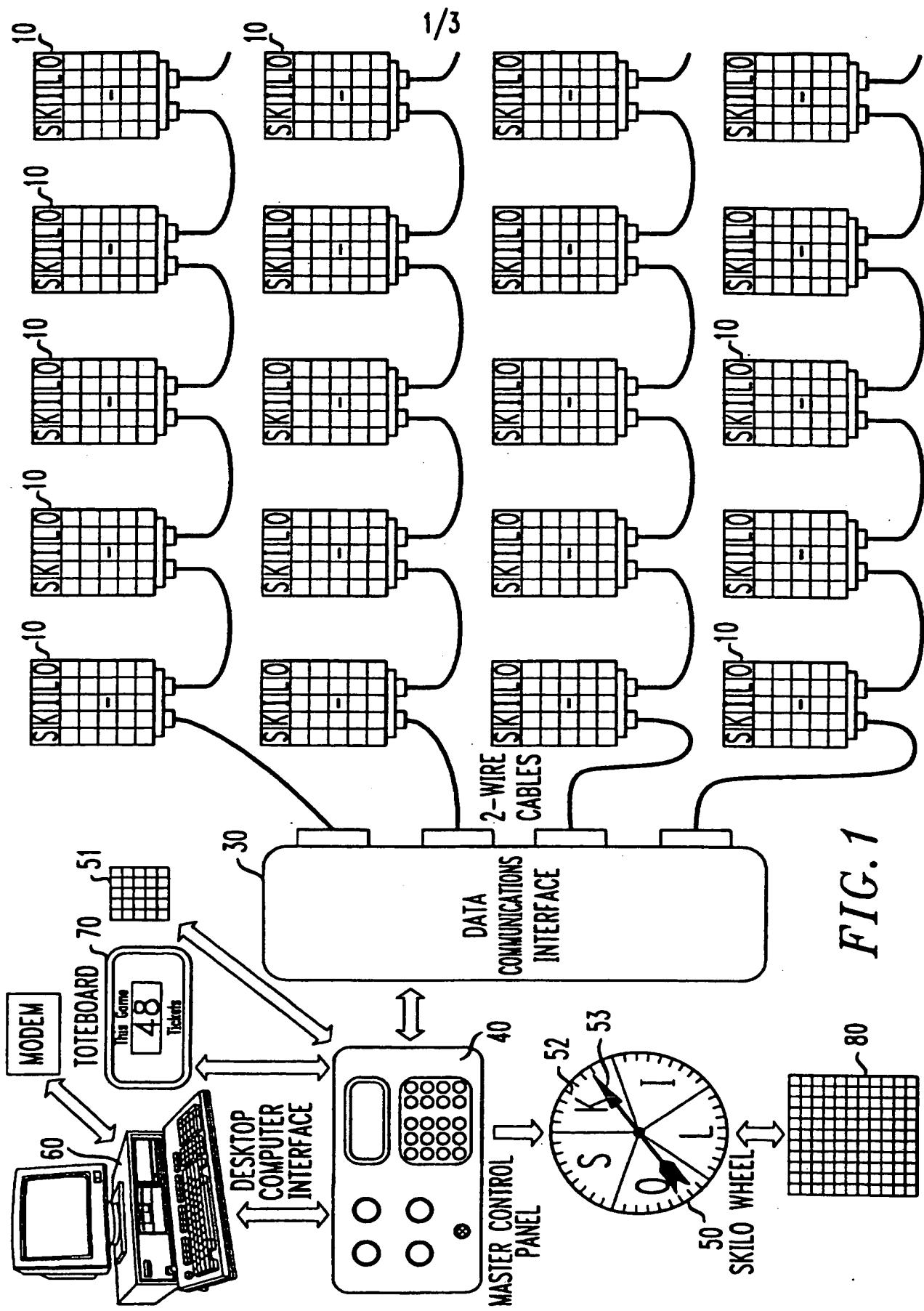
4. The automated, interactive amusement game in accordance with Claim 1 wherein said means for starting said random number generator and means for stopping said random number generator at said players' desks comprise a start button and a stop button enabled by said master control panel and illuminated when enabled.

5. The automated, interactive amusement game in accordance with Claim 1 wherein said player's desk has positioned thereon, a replay button permitting said player to replay said playing cards of said previous game, said replay button automatically adjusting said player's bank.

6. The automated, interactive amusement game in accordance with Claim 1 wherein said player's desk has positioned thereon, a cancel button permitting said player to cancel any of said playing cards prior to the start of said automated interactive amusement game, said cancel button automatically adjusting said player's bank.

7. The automated, interactive amusement game in accordance with Claim 1 wherein said random numbered generator comprises a vertically-oriented wheel having indicia in the form of numerals consecutively positioned about the circumference of said wheel, said wheel having a selection indicator mounted at the center of said wheel, said selection indicator spinning in response to said means for starting said random number generator positioned at said player's desk and stopping pursuant to said means for stopping said random number generator positioned at said player's desk.

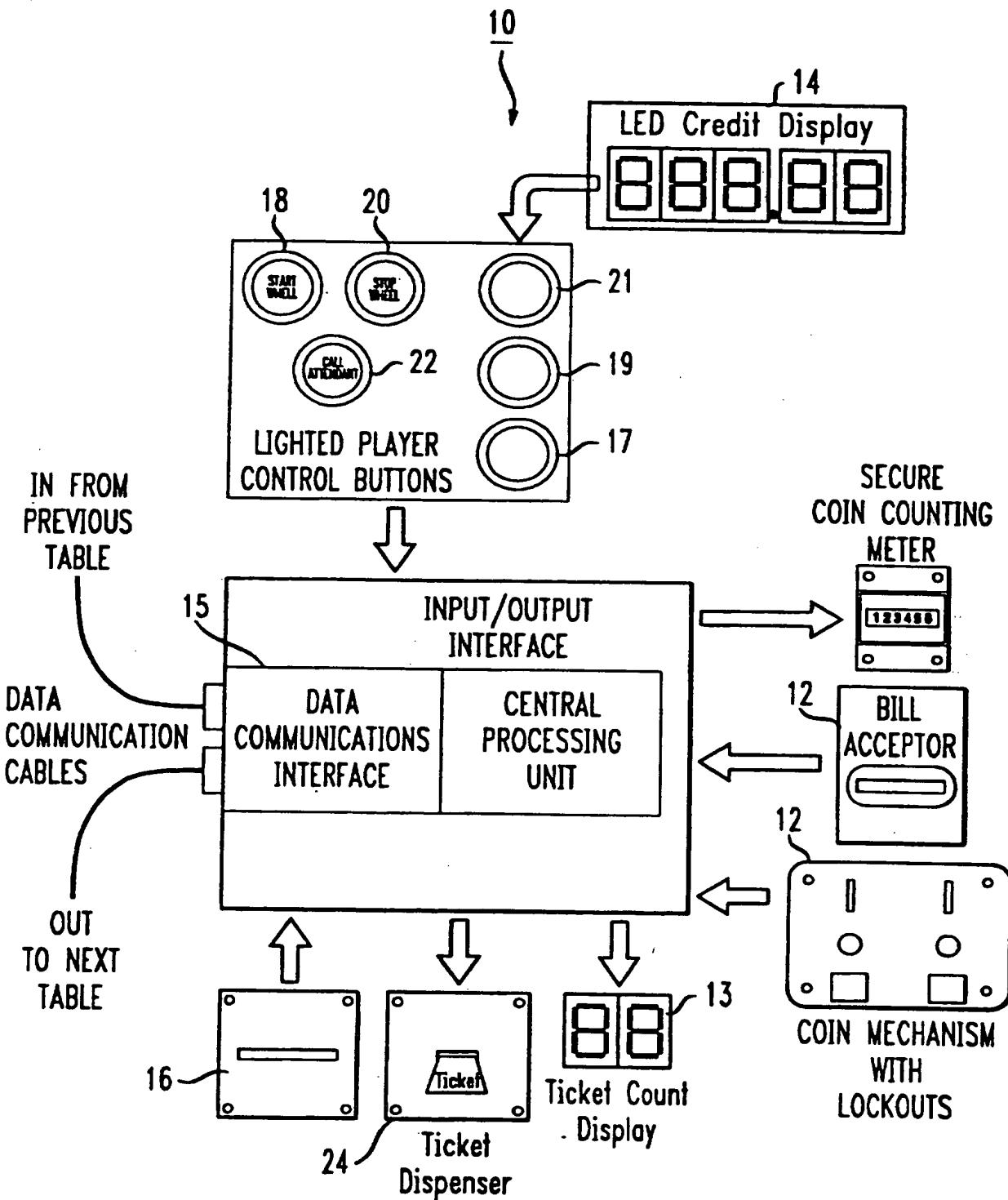
8. The automated, interactive amusement game in accordance with Claim 1 wherein said means for directing and dispensing of value tickets from said master control board to said ticket dispenser at said player's desk comprises said keyboard entry pad in conjunction with said encoded switch at said player's desk to permit said ticket dispenser to dispense said value tickets.



SUBSTITUTE SHEET (RULE 26)

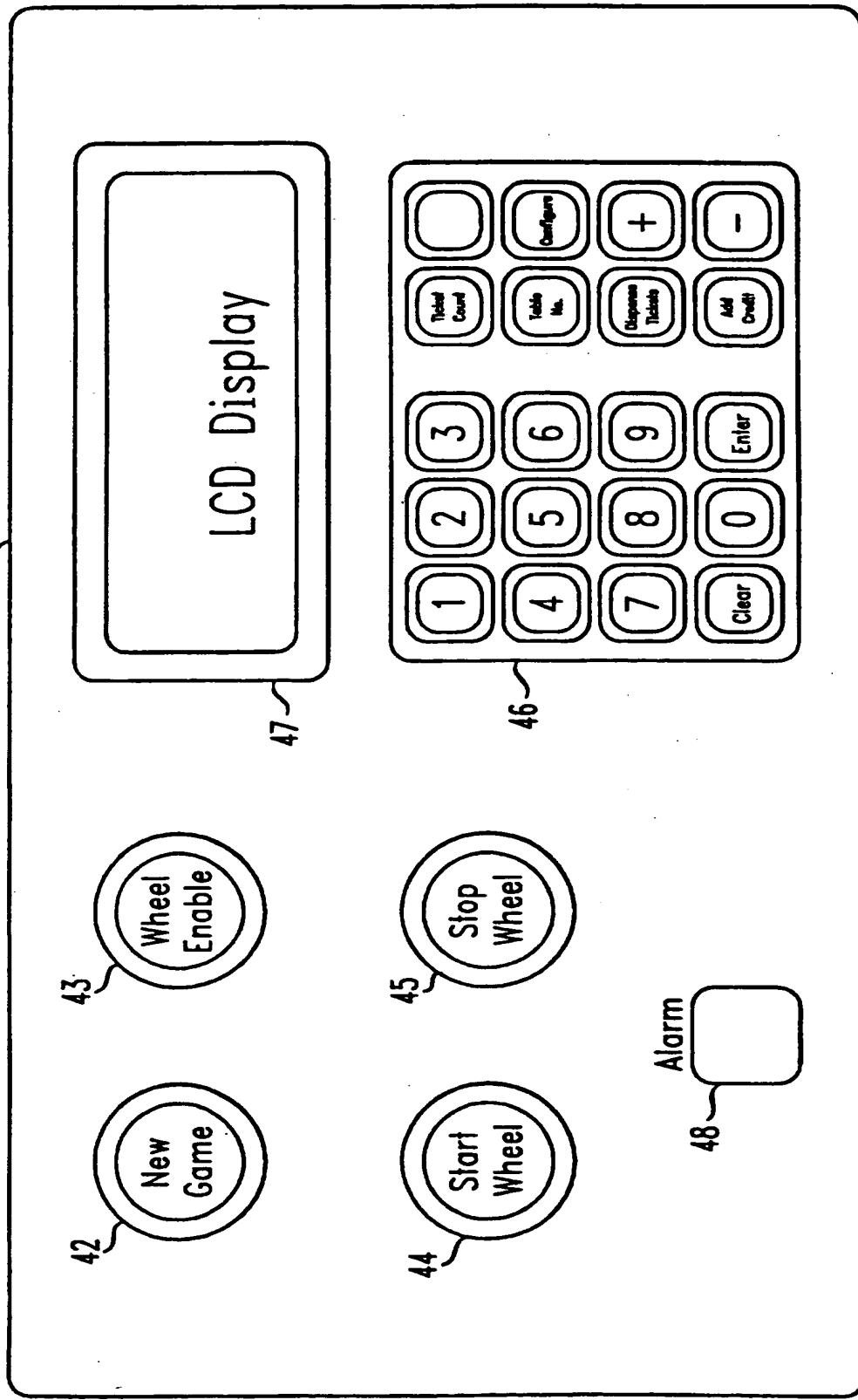
2/3

FIG. 2



3/3

FIG. 3



SUBSTITUTE SHEET (RULE 26)



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :	A3	(11) International Publication Number: WO 97/15361
A63F 3/06		(43) International Publication Date: 1 May 1997 (01.05.97)

(21) International Application Number: PCT/US95/13917

(22) International Filing Date: 23 October 1995 (23.10.95)

(71)(72) Applicant and Inventor: CAPPETTA, Louis [US/US];
921 Cedar Bridge Avenue, Brick Town, NJ 08723 (US).(74) Agent: FRAYNE, Clifford, G.; 44 Princeton Avenue, Brick
Town, NJ 08724 (US).(81) Designated States: CA, JP, MX, European patent (AT, BE,
CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT,
SE).

Published

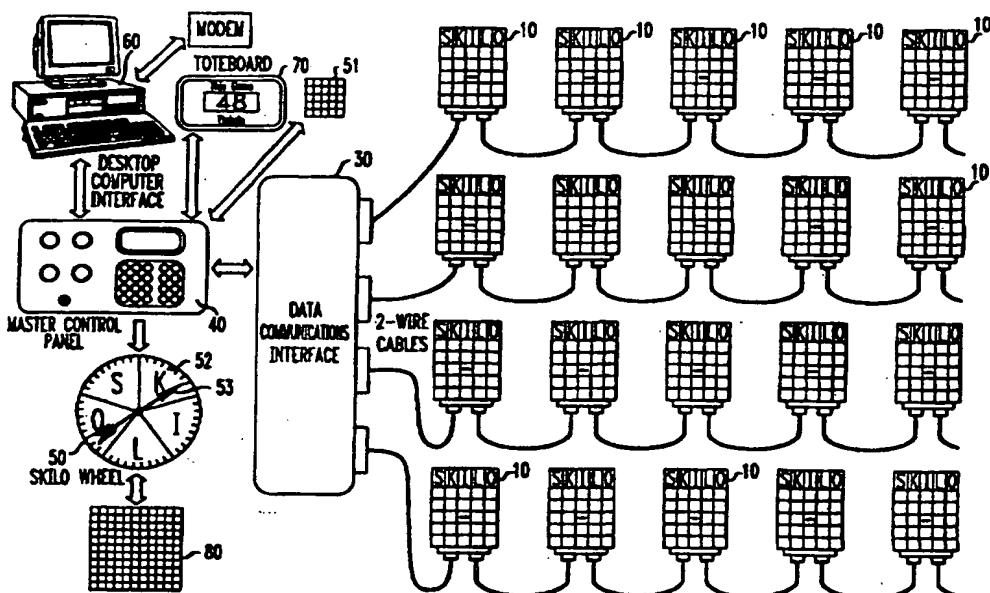
With international search report.

Before the expiration of the time limit for amending the
claims and to be republished in the event of the receipt of
amendments.

(88) Date of publication of the international search report:

24 July 1997 (24.07.97)

(54) Title: INTERACTIVE AMUSEMENT GAME AND PRIZE REDEMPTION SYSTEM



(57) Abstract

This invention is an interactive amusement game and redemption system in which a central processing unit, control panel (40), and plurality of players' desks are interconnected such that the operator of the control panel and the game is aware of the money deposited by tickets to be awarded and to which player; the same information being available to the player at each individual player's position through instantaneous LED display (47); and the players seeking to be awarded points by starting and stopping a random number generator (50) selectively to match an indicia on the player's card.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/13917

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : A63F 3/06
US CL : 463/7, 19, 22, 25, 40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 273/141A, 141R, 454; 463/7, 19, 22, 25, 40

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2,463, 139 A (BENKER) 01 March 1949.	7
A	US 4,378,940 A (GLUZ et al) 05 April 1983.	1-8
A	US 4,875,686 A (TIMMS) 24 October 1989.	1-8
A	US 4,889,339 A (OKADA) 26 December 1989.	4
A	US 5,007,649 A (RICHARDSON) 16 April 1991.	1-8
A	US 5,192,076 A (KOMORI) 09 March 1993.	1-8
A	US 5,326,104 A (PEASE et al) 05 July 1994.	1-8
A	GB 2 231 809 A (STANLEY) 28 November 1990.	1-8
A	GB 2 232 607 A (ARMSTRONG) 19 December 1990.	1-8

 Further documents are listed in the continuation of Box C. See patent family annex.

•	Special categories of cited documents:	
A	document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
I	earlier document published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
L	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
O	document referring to an oral disclosure, use, exhibition or other means	"A" document member of the same patent family
P	document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

08 MAY 1997

Date of mailing of the international search report

02 JUN 1997

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

PAUL E. SHAPIRO

Telephone No. (703) 308-1816

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.